

REMARKS

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the Office Action of June 22, 2006 the following actions were taken:

(1) The Examiner withdrew the two provisional non-statutory obviousness-type double patenting rejections for claims 1-22; and

(2) Claims 1-22 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Pat. No. 6,203,899 (hereinafter "Hirose") in view of U.S. Pat. No. 5,372,884 (hereinafter "Abe") and U.S. Pat. No. 3,007,878 (hereinafter "Alexander"), further in view of U.S. Pat. No. 5,965,252 (hereinafter "Santo").

It is respectfully submitted that the presently pending claims be allowed based on the remarks below.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 1-22 U.S.C. § 103(a) as being unpatentable over several references.

The issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness. In order to maintain a *prima facie* case of obviousness by combining references, the prior art must provide some reason or motivation to make the claimed compositions. *In re Dillon*, 16 U.S.P.Q.2d 1897, 1901 (Fed. Cir. 1990). As aptly stated in *In re Jones*, 21 U.S.P.Q.2d 1941, 1943-44 (Fed. Cir. 1992):

"Before the PTO may combine the disclosure of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art... Conspicuously missing from this record is any *evidence*, other than the PTO's speculation (if it be called evidence) that one of ordinary skill in the...art would have been motivated to make the modifications of the prior art necessary to arrive at the claimed (invention)."

It has been widely recognized that virtually every invention is a combination of elements and that most, if not all, of these will be found somewhere in an examination of the

prior art. This reasoning lead the court, in *Connell v. Sears, Roebuck & Co.*, 220 U.S.P.Q. 193, 199 (Fed. Cir. 1983) to state:

"...it is common to find elements or features somewhere in the prior art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entirety, would have been obvious to one of ordinary skill in the art at the time the invention was made." (underlining added)

In re Sernaker, 217 U.S.P.Q. 1, 5-6, (Fed. Cir. 1983) states a test to determine whether a rejection of an invention based on a combination of prior art elements is appropriate as follows:

"The lesson of this case appears to be that prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings...The board never showed how the teaching of the prior art could be combined to make the invention." (underlining added)

With the above background in mind, the Applicant contends that a *prima facie* case of obviousness with respect to pending claims has not been met. Specifically, the references do not provide sufficient teachings or motivation to be modified or combined in order to arrive at Applicant's invention. Further, Applicant contends that the combination of references is based on hindsight. Therefore, without knowledge of the disclosure of the present invention, one of ordinary skill in the art would not be able to make the combinations proposed to arrive at the claimed invention.

Emphasis on the independent claims is provided herein, as the Applicant asserts that these claims are all patentably distinct over the prior art. Specifically, the Examiner has rejected claims 1-22 as being obvious in view of Hirose, Abe, Alexander, and Santo. Thus, a brief discussion of these references is believed to be in order.

Hirose

Hirose discloses a printing medium containing a liquid-absorbent base material; an ink-receiving layer consisting of a pigment, a binder, and a cationic substance; and a surface layer consisting of cationic ultrafine particles. Hirose exemplifies the ultrafine particles as

two distinct species: first, as “silica subjected to a surface treatment with a compound containing some of the cationic metal oxides or metal atoms as described above,” which were “magnesium, calcium, aluminum, zinc, chromium, iron, copper, tin, lead, and manganese,” and second, as “silica subjected to a surface treatment with an organic compound having both amino group or quaternary ammonium group thereof and functional group having reactivity to a silanol group on the surface of the silica.” See col. 4, lines 18-25. The Examiner also states that the cationized silica is formed either by treating it with a metal oxide or by treating it with organic compound having both an amino or quaternary ammonium group and a functional group. See February 6, 2006 Office Action, page 5.

Abe

Abe discloses an ink-jet recording sheet comprising a support and ink receiving layer wherein the ink receiving layer contains a cation-modified non-spherical colloidal silica. The silica is cation-modified by coating the silica with a hydrous metal oxide such as hydrous aluminum oxide, hydrous zirconium oxide, or hydrous tin oxide as carried out by the methods in Alexander. See col. 2, lines 48-58. The Examiner describes Abe in the same fashion. See February 6, 2006 Office Action, page 5.

Alexander

Alexander discloses the methods of making positively charged particles of dense silica by mixing them with a basic salt of a metal having a valence of 3 to 4, such as basic aluminum chloride. See col. 1, lines 11-16; col. 2, lines 21-26; col. 4, lines 9-11. The Examiner also states the Alexander teaches the “forming [of] a stable aquasol of positively charged coated silica particles.” See February 6, 2006 Office Action page 5, last paragraph.

Santo

Santo discloses a printing medium comprising a substrate and an ink receiving layer. The ink receiving layer comprises an alumina hydrate surface-treated with a coupling agent. See Abstract. The coupling agent is preferably a silane coupling agent. See col. 7, lines 22-24. The Examiner also states that Santo teaches “an alumina hydrate surface-treated in an aqueous dispersion with a silane coupling agent” See February 6, 2006 Office Action, page 7.

Claims 1-22

The Examiner has rejected claims 1-22 using a combination of the aforementioned references; Hirose, Abe, Alexander, and Santos. Each claim proscribes a method that contains at least 3 distinct steps. First, the silica is dispersed in water. Second, the silica's negative charge is reversed by a surface-activating agent forming a surface-activated silica. Third, the surface-activated silica is then reacted further with an organosilane reagent to form a reagent-modified, surface-activated silica. Dependent claims 2-4 vary the order of the first two steps of the method but the reagent-modifying step is always performed such that the organosilane reagent is attached to the surface-activated silica, which requires that the surface-activated silica exist before or as the organosilane reagent is attached.

The Examiner has combined Hirose with Abe and Alexander to provide the surface-activated silica required by the present invention. However, the Examiner also noted that such a combination "fail[s] to teach that silica particles are coated with both alumina or alumina hydrate and with an organic compound." See Office Action page 4. In order to cure the deficiency, the Examiner then combines Hirose, Abe, and Alexander with Santo, which teaches an alumina hydrate surface treated with a silane coupling agent. However, the Applicant maintains that this combination of references is improper and does not teach the method claimed by the present invention.

None of the references cited by the Examiner teach the multiple steps of cationizing the surface of the silica and modifying the silica with an organosilane reagent. The Examiner has combined three silica references with an alumina reference. Hirose, Abe, and Alexander are silica references, each referring to silica particles and specifically teaching silica surface activation, as opposed to Santos, which refers to alumina particles (not coatings) and teaches alumina particle surface activation. As the present invention requires silica surface activation, such a combination is improper, and further, does not even arrive at all the claimed limitations.

The Examiner alleges that an ordinary person skilled in the art would be motivated to make such a combination and would have a likelihood of success since the coated silica of Hirose in view of Abe and Alexander "has the same **alumina hydrate** surface as in Santo." See Office Action page 5. However, a close inspection of the cited references reveals that the chemical surface structure is quite different. Alexander provides a figure of the surface of its activated silica. The figure clearly shows a silica particle having an outer silicon atom surface partially bound by a basic aluminum chloride compound having the formula, Al_3 .

$\text{O}_2(\text{OH})_2\text{H}^+\text{Cl}^-$. See Figures 1 and 2. Likewise, one would expect a similar composition for Abe and Hirose, since both references teach a similar surface-activated silica particle. It is worthy to note, that the entire surface of the silica particle need not be bound. Alexander discloses “a surface coverage of about 2.4 mol percent.” See col. 4, lines 54-55. The present invention requires a surface activating agent in a sufficient amount to modify the net charge of the surface from positive to negative. See page 7, lines 31-32 and page 8, lines 1-2.

Conversely, Santos teaches a surface-activated alumina hydrate. To be clear, alumina hydrate is not the aluminum chloride hydrate as found in the Applicant’s disclosure. Alumina and aluminum are distinct in this context; the first referring to a particle and the later referring to an individual atom which is part of a chemical molecule. Specifically, in Santos, alumina is a particle having “pore properties” “within a range of from 0.1 to 1.0 ml/g” and a “specific surface area” “of from 40 to 500 m^2/g .” See col. 4, lines 15, 19-21, 25-26. After surface activation, the surface of the alumina could have Al-O, Al-OH, or Al-H as well as Al-silane coupling agent. See col. 3, lines 60-65; col. 4, lines 39-43. Therefore, the alumina activated surface of Santos and the silica activated surface of Hirose, Abe, and Alexander are clearly not the same. They are, however, similar in at least one way in that they both include particles that have chemicals attached thereto. The aluminum chloride hydrate of the present invention is more of a chemical coating, whereas the alumina hydrate of Santos is a particle. Thus, the Applicant contends that the combination of these references is improper and would have no likelihood of success at achieving the present invention. As Santos teaches a surface-treated alumina particle and Hirose, Abe, and Alexander teach surface-activated silica particles, the combination of these references would provide a mixture of silica and alumina particles. There is no teaching that the combination of these particles would react to form the reagent-modified and surface-activated silica of the present invention. In other words, an alumina particle cannot be substituted for an activation chemical, as an alumina particle would not be able to “activate” a silica particle. Furthermore, the Applicant contends that an attempt to combine single reaction steps from different reaction schemes with different reaction materials is highly problematic, likely to fail, and therefore, would have to be based on impermissible hindsight.

Therefore, the Applicant submits that the pending claim set is novel and respectfully requests that the Examiner withdraw the rejection.

CONCLUSION

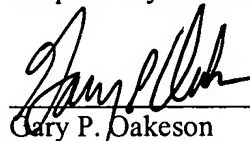
Because the combination of references does not teach the method of the present invention, the Applicant respectfully asserts the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness. Additionally, because the current references do not contain adequate motivation or suggestion to modify or combine their distinct reaction schemes, the Applicant respectfully asserts any such combination would be improper. Therefore, the pending claim set should be allowable for these additional reasons. Reconsideration is respectfully requested.

In view of the foregoing, Applicants submit that claims 1-22 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone W. Bradley Haymond (Registration No. 35,186) at (541) 715-0159 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 22nd day of August, 2006.

Respectfully submitted,



Gary P. Oakeson
Attorney for Applicant
Registration No. 44,266

THORPE NORTH & WESTERN, LLP
8180 South 700 East, Suite 200
Sandy, Utah 84070
(801) 566-6633

On Behalf Of:
HEWLETT-PACKARD COMPANY
1000 NE Circle Blvd., m/s 422B
Corvallis, OR 97330-4239
(541) 715-0159